US009636873B2

(12) **United States Patent**
Joyce

(10) **Patent No.: US 9,636,873 B2**
(45) **Date of Patent: May 2, 2017**

(54) **SOLID IMAGE APPARATUS WITH IMPROVED PART SEPARATION FROM THE IMAGE PLATE**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 313 days.

(21) Appl. No.: **13/600,729**

(22) Filed: **Aug. 31, 2012**

(65) **Prior Publication Data**

US 2013/0292862 A1 Nov. 7, 2013

Related U.S. Application Data

(60) Provisional application No. 61/642,175, filed on May 3, 2012.

(51) **Int. Cl.**

B29C 67/00	(2006.01)
B33Y 30/00	(2015.01)
B33Y 40/00	(2015.01)
B29K 105/00	(2006.01)

(52) **U.S. Cl.**

CPC ***B29C 67/0096*** (2013.01); ***B29C 67/0066*** (2013.01); ***B29C 67/0085*** (2013.01); *B29K 2105/0058* (2013.01); *B33Y 30/00* (2014.12); *B33Y 40/00* (2014.12)

(58) **Field of Classification Search**

CPC B29C 67/0066; B29C 67/0087
USPC 264/308, 334, 401, 459, 497; 425/375, 425/174.4

See application file for complete search history.

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(57) **ABSTRACT**

Devices, methods, and computer program products for facilitating the assembly of three-dimensional parts in a layer-wise fashion are disclosed, wherein separation forces between the assembler device and the parts are minimized at certain interfaces. Parts may be produced from polymers, photopolymers, metals, or other materials. In some aspects of the present disclosure, separation forces are minimized via the utilization of a cure inhibiting layer on a top surface of the image plate and via sliding the part from contact with a portion of the image plate having high elevation to above a portion of the image plate with low elevation. In some aspects, the assembler device further comprises a sweeper configured to expose the cure inhibiting layer to a source of cure inhibitor after a cure cycle.

20 Claims, 8 Drawing Sheets